

L.—*Note on the Common Hedgehog* (*Erinaceus europæus*, *Linnaeus*) and its *Subspecies or Local Variations*. By G. E. H. BARRETT-HAMILTON.

A COLLECTION of small mammals recently made by the late Mr. W. Dodson in Roumania included two hedgehogs which differ considerably from ordinary British and Continental animals in their coloration. In naming them I have been obliged to overhaul the whole series in the collection of the British Museum, and it may be well to here summarize the result of my work.

The colours of the hedgehog are so dull that they do not at first sight seem to afford much scope for extensive local variations as compared with those of other mammals. So far as the specimens of the common species at my disposal go, this is borne out only to a certain extent—that is to say, while I know of no brilliant local developments, there are yet wide differences in colour between the hedgehogs, say, of Mount Lebanon, of South Spain, and of Great Britain. But those who wish to see for themselves what striking developments may, under the influence of natural selection, be evolved from so apparently poor material should look at the specimens of other genera and species from the Ethiopian and Oriental Regions. In some of these blacks and whites are used with very conspicuous effect; but the brightest form of which I have seen a specimen is *E. frontalis*, Smith, of South Africa, with its almost orange frontal patch and brilliantly tinted spines.

The colour of the underside and other haired surfaces of our common British hedgehog is due to a mixture in variable proportions of dirty brown and dirty white hairs. Some specimens are altogether brown, but in others there is a considerable quantity of the dirty white hairs, which do not, however, assume any particular discernible pattern or arrangement. The lightest skins which I have seen are those of two quite small individuals collected by Mr. W. R. Ogilvie Grant in Elgin, Scotland. They have the underside and the nose nearly white, but possess a dark not very well-defined breast-spot and traces of a dark median ventral area.

The spines of the upper surface are marked with an alternation of black or dark brown and dirty white annulations, usually in three bands, of which the central is dark, while the two extremities of the spines are light. A small dark tip may or may not be present.

I find that apparently the coloration tends to become lighter as the animal ranges southward, until Spanish specimens are almost white. This is effected by a lightening not only of the hairs but also of the spines. These appear to become whiter along their whole length, so that while in one spine the dirty is represented by a purer white and the brown band has little intensity, in another the brown band may have entirely disappeared and the colour is white throughout the whole length of the spine. In its extreme form this becomes a very well-marked subspecies, which I accordingly here take the opportunity to describe.

Another phase of the animal is represented in Italy, where, as regards colour, the hedgehogs are slightly paler than those of Western Europe. In Sicily there is a subspecies of which the longer, thicker bristles have broader white and more strongly contrasted deeper black annulations. The Roumanian hedgehogs are distinguishable by the fact that the dirty-white hairs of the under surface are arranged in a defined breast-spot, thus approximating (in this respect only) very closely to *E. concolor*, Martin, of which the Museum possesses the type specimen from Trebizond. In other respects the type of *E. e. concolor* is of highly remarkable appearance, and differs in its dark burnt-umber coloration from specimens from Mount Lebanon, which, although similar to *E. e. concolor* in size and proportions, possess the white tips to the spines which characterize our own hedgehog. I suspect, however, that the colour of the former is due to the process of preservation to which it was subjected, and hence I refer the Lebanon specimens to *E. e. concolor*. Lastly, two specimens from Pekin and Chefoo show that there occurs at the extreme eastern limit of the great Palaearctic Region a hedgehog which, although paler, is yet not very widely different from our own.

One or two points of general interest deserve a brief notice before I pass on to enumerate the various subspecies; and, firstly, it is interesting to find Eastern European mammals approaching or intergrading with those of Western Asia. Several similar instances have recently been brought before our notice. Thus we have *Ovis ophion urmiana** of the islands of Lake Urmi, intermediate between *O. ophion* of Cyprus and *O. orientalis* of Asia; *Microtus Musignani illyricus*† of Bosnia, intermediate between *M. Musignani* of Spain and *M. persicus* of Kurdistan and Persia; *Meles meles mediterraneus*‡ of Crete, intermediate between *M. m. typicus* of

* A. Günther, Journ. Linn. Soc., Zool. vol. xxvii. p. 374.

† Barrett-Hamilton, Ann. & Mag. Nat. Hist., March 1899, p. 225.

‡ *Id. op. cit.* Nov. 1899, p. 383.

Europe and *M. m. canescens* of Persia; and *Mustela foina mediterranea**, occurring in South Spain and Asia Minor, and at Kandahar.

Secondly, it is curious to find that, whereas in the case of the weasel † there is a tendency for the white belly of northern specimens to become yellow in the south, in the hedgehog the process would seem to be reversed; but it is just possible that we may find a parallel in the light *Eliomys pallidus* of Sicily, in *Mustela foina mediterranea*, in *Microtus Musignani illyricus*, and in *Meles meles mediterraneus*.

As regards cranial differences, I find that I can distinguish between, on the one hand, the similarly coloured Roumanian and the true *concolor*, and there are also characters whereby the hedgehogs of different parts of Europe may be separated, as, for instance, the British and the Italian. It is noticeable that the sagittal crest may be developed in quite young specimens, as in one from South Germany, in which the teeth of the permanent dentition are only just making their appearance. The size of certain of the teeth is subject to some variation in different individuals. This is, I think, especially the case as regards *inc.*², a tooth the size and position of which is relied upon in part by my friend Mr. W. E. de Winton ‡ as a distinguishing characteristic between *E. algirus*, Duvernoy, and *E. europæus*. This tooth is usually far larger in the latter than in the former species; but I find it quite small in some individuals, as in a (perhaps not quite) adult from Cardiff, and intermediate in size in a large male from Haddingtonshire, Scotland. The shape of the frontal process of the premaxilla seems to be a quite reliable subspecific character.

The following subspecies are recognizable:—

(1) *Erinaceus europæus occidentalis*, subsp. n.

Type from Haddingtonshire, Scotland; presented by Mr. W. Eagle Clarke (for particulars see below).

Distinguishing characteristics. Colour of underside a mixture of dirty white and dirty brown without definable pattern. Spines with at least three bands as above described. Skull with conspicuous frontal processes to the premaxillæ, with a blunt or nearly square posterior termination, and seldom showing a sharply defined point or angle; these processes usually extend backward for more than half the length of the nasals.

Dimensions (in millim.) of four selected specimens:—

* Barrett-Hamilton, *op. cit.* June 1898, pp. 441-2.

† *Id. op. cit.* Jan. 1900, p. 41.

‡ "On a Collection of Mammals from Morocco," P.Z.S. 1897, pp. 955-6.

	Head and body.	Tail.	Hind foot.	Ear.	Skull.	
					Basal length.	Breadth at zygoma.
♂, Cardiff, Wales, 26th May, 1899 (<i>R. Drane</i>)	263	20	43	22	53	36
♂, Innerwick, Haddingtonshire, Scotland, 8th April, 1899 (<i>W. Eagle Clarke</i>). Type of subspecies. (Mammæ 8.) The skull is the largest I have seen	218	17	42	28	57	34
No. 93. 10. 30. 2. ♂, Ennis, Co. Clare, Ireland, 21st Sept., 1893 (<i>J. W. Scott</i>)	252	30	40	
♀ juv., Hardington, Gloucester- shire (<i>R. Hooper</i>), 15th Nov., 1894	179	23	35	21	damaged.	

Distribution. The British Isles and probably parts of median Western Europe.

Since all the British skulls can be distinguished from those of continental hedgehogs, I have no alternative but to separate the Western hedgehogs.

(2) *Erinaceus europæus typicus*, Linnæus, Syst. Nat. ed. x. p. 52 (1766).

Type locality Upsala, Sweden.

Distinguishing characteristics. In size and colour similar to *E. e. occidentalis*, but the skull may be distinguished by the frontal processes of the premaxillæ, which, although extending backward half the length of the nasals, end in a sharply defined point.

A specimen (no. 93. 3. 1. 7) from Aker Island, Røms Island, Norway (62° N. lat.), 28th May, 1890, has the dimensions of the skull 55.5 x 36. A skull from Switzerland is also of this form.

Distribution. Scandinavia and central continental Europe. Most German animals which I have seen are intermediate in their characters, and their exact identification must await the arrival of Eastern European specimens.

(3) *Erinaceus europæus hispanicus*, subsp. n.

Type No. 95. 3. 3. 2 (unsexed) of the British Museum collection, from Seville, Spain (for particulars see below).

Distinguishing characteristics. General size perhaps a little smaller than that of *E. e. typicus* and feet and legs more slender. Coloration markedly paler, being almost white in the extreme form. The bristles in many cases lack the black

central band altogether; the underside is white and the hairs of the legs and head are paler than in *E. e. typicus*.

The skull differs from that of *E. e. typicus* or *occidentalis* in that the frontal processes of the premaxillæ are inconspicuous and extend backward not further than, sometimes less than half the length of, the nasals.

The following are the dimensions (in millim.) of four specimens, as taken from the labels, and to which I have added details for the skulls:—

	Head and body.	Tail.	Skull.	
			Basal length.	Breadth at zygoma.
No. 95. 3. 3. 1. ♂, Seville, Spain, 26th Jan., 1895 (<i>collected for the late Lord Lilford by A. Ruiz</i>)	210	15	53 (damaged)	36
No. 95. 3. 3. 2. Unsexed, ditto. (Type of subspecies.) 14th Oct., 1894	230	20	56	38
No. 95. 3. 3. 3. ♀, ditto, 30th Dec., 1894	210
No. 95. 3. 3. 4. ♀, ditto, 14th Oct., 1894	210	15	54 (damaged)	36

Distribution. At present only known from Seville, but this is probably the hedgehog of South Spain, having a distribution perhaps corresponding to *Lepus Lilfordi*, de Winton.

(4) *Erinaceus europæus italicus*, subsp. n.

Type No. 98. 10. 2. 5 of the British Museum collection, from Siena, Italy (for particulars see below).

Distinguishing characteristics. Size perhaps a little smaller than that of *E. e. typicus* and colour slightly paler.

The skull is similar to that of *E. e. typicus*.

The following are the dimensions (in millim.) of four specimens:—

	Head and body.	Tail.	Hind foot.	Ear.	Skull.	
					Basal length.	Breadth at zygoma.
No. 98. 10. 2. 5. ♂, Siena, Italy, 30th March, 1898 (<i>the late Signor S. Brogi</i>). (Type of subspecies.)	220	28	42	25	51·5	34·5
No. 98. 10. 2. 6. ♂, ditto, 22nd August, 1898.	210	30	40	30	52	34·5
No. 98. 10. 2. 7. ♀, ditto, 30th March, 1898.	200	23	43	27	50	36
No. 98. 10. 2. 8. ♀ juv., ditto, 1st Sept., 1898	208	32	38	29	48	31·5
Original no. 126. ♀, Crauves- Sales, Haute-Savoie, 1600 metres, 5th Dec., 1899 (<i>A. Robert</i>)	222	19	41	26	50	32

Distribution. Italy (besides the above I have seen also a specimen, no. 97. 3. 7. 1, from Calapiano *, Empoli, Florence, collected by Mr. A. H. Savage Landor), reaching at least northwards to Switzerland.

(5) *Erinaceus europæus roumanicus*, subsp. n.

Type original no. 50, from Gageni, Roumania (for particulars see below).

Distinguishing characteristics. In size, proportions, and coloration of the upperside agrees with *E. e. typicus*, but in coloration of the underside with *E. e. concolor*, Martin, having like that subspecies a dirty white spot on the breast.

Two skulls at my disposal are distinguishable from five of *E. e. concolor* by their greater size, including that of the teeth, especially of pm.^3 . They agree, however, with *E. e. concolor* in the inconspicuous posteriorly squared frontal processes of the premaxillæ, which thus end far more bluntly even than the corresponding processes of *E. e. europæus*, and fail to reach backward to half the length of the nasals; anteriorly the nasals are broader than in other subspecies.

Dimensions (in millim.) of two specimens:—

	Head and body.	Tail.	Hind foot.	Ear.	Skull.	
					Basal length.	Breadth at zygoma.
♂ (immature), Gageni, Roumania, 28th April, 1899 (the late W. Dodson)	170 (about)	28	41	24	50	32
Original no. 50. ♀ (adult), ditto, 19th April, 1899. (Mammæ 8.) (Type of subspecies.)	306	24	43	28	54.5	36

Distribution. At present known only from the type specimens, but this form probably ranges eastwards until it meets and perhaps intergrades with *E. e. concolor*. It was discovered by the late Mr. W. Dodson.

(6) *Erinaceus europæus concolor*.

Erinaceus concolor, W. Martin, P. Z. S. 1837, pp. 102, 103.

Type No. 55. 12. 24. 83, from the Museum of the Zoological Society of London, collected by Mr. Keith Abbott at Trebizond.

* This, although a young specimen, bears the date of 19th February, 1897.

Distinguishing characteristics. Size smaller than that of *E. e. europæus* and tarsi proportionately longer; annulations of the spines very indistinct, being almost absent in the type specimen, in which the colour (both of the spines and of most of the hairs) is an almost uniform vandyke-brown or burnt umber (Ridgway's nomenclature); the chest is, as in *E. e. roumanicus*, dirty white, and there is a spot of the same colour on the forehead and before each ear. The spines reach further forward on the head than in *E. e. europæus*.

I prefer to regard the remarkable coloration of the type as having been artificially produced, and to identify with this subspecies four specimens (nos. 94. 5. 7. 7 to 10) collected by Mr. Saleem Baroody on Mount Lebanon. In these the general size and proportions are as in *E. e. concolor*, but the white tips to the spines are present, although the annulations of their basal parts are less distinct than in those of other known subspecies.

Skull with the frontal processes of the premaxillæ resembling those of *E. e. roumanicus*, but with the teeth, and especially pm.³, smaller than in that subspecies. All the skulls are imperfect, but the palatal length both of the type and of two of the Mount Lebanon skulls reaches only 31, as against 33 millim. in *E. e. roumanicus*, and thus indicates a smaller animal.

Distribution. At present known only from Trebizond and Mount Lebanon.

(7) *Erinaceus europæus Consolei*, subsp. nov.

Type No. 98. 10. 6. 1, from near Palermo, Sicily (Mr. J. I. S. Whitaker).

Distinguishing characteristics. Spines longer and thicker than in continental subspecies, and with the subterminal white bands much broader and often obliterating the small dark tips; the median dark band is also blacker and more sharply contrasted with the white bands. Colour of underside lighter than in *E. e. europæus*.

Skull with premaxillæ moderately short and resembling those of *E. e. hispanicus*. In the type the frontal processes do not quite reach backward as far as the centre of the nasals.

Dimensions (in millim.) of the type:—

Head and body.	Tail.	Hind foot.	Ear.	Skull.	
				Palatal length.	Breadth at zygoma.
252	50	40	23	33 (damaged)	36

Distribution. At present known only from the type, which is from Sicily, and certainly represents an interesting local development of the hedgehog, for the opportunity of describing which we are indebted to Mr. J. I. S. Whitaker. At his suggestion I have pleasure in connecting it with the name of Signor Console, his museum curator, to whose energy the British Museum is indebted for a long series of Sicilian mammals, including the types of my *Eliomys pallidus* and *Glis insularis*.

(8) *Erinaceus europæus sibiricus*.

Erinaceus sibiricus, Erxleben, Syst. Règn. An. 1777, p. 172.

Type unknown.

Description. "*E. europæus*, notæo ex rufo-fusco et flavido variegato; gastræo dilute cinereo, flavido-lavato" (L. J. Fitzinger, Sitzb. d. k. Akad. d. Wiss. I. Abth., Nov.-Heft, Jahrg. 1867, p. 9).

Distribution. Siberia.

I have never seen a specimen of this form.

(9) *Erinaceus europæus dealbatus*.

Erinaceus dealbatus, R. Swinhoe, P. Z. S. 1870, p. 450.

Type No. 61. 6. 2. 5, from Peking. Collected by R. Swinhoe.

Distinguishing characteristics. A pale form of *E. europæus* of which we know very little, Swinhoe's description having been taken from a quite young individual, and hence being not very reliable.

The only adult skull which is available for comparison is that of no. 74. 1. 24. 23, collected by Swinhoe at Chefoo, China, and in which the frontal processes of the premaxillæ are inconspicuous and terminate posteriorly in a sinuous line with no sharply defined point. The dimensions reach 54 × 35.

Distribution. At present only known from Chefoo and Peking, China.

(10) *Erinaceus europæus amurensis*.

Erinaceus europæus, L., var. *amurensis*, L. v. Schrenck, Reisen und Forschungen im Amur-Lande in den Jahren 1854-1856, Bd. i. pp. 100-105, pl. iv. fig. 2 (1858).

Typical locality Amurland.

The Museum possesses no specimen of this subspecies, so that I cannot compare it with others.

In Morocco, Algeria, Tripoli, and Tunis *E. europæus* is represented by the distinct *E. algirus*, the distinguishing characteristics of which have been so well pointed out by my friend Mr. W. E. de Winton (*op. et loc. cit.*). Mr. de Winton has identified with this hedgehog a single specimen from Andalucia, and regards its occurrence in Spain (should there have been no mistake as to the labelling and origin of the specimen) as an interesting extension of the range of a North-African mammal to Europe. I have recorded* the existence of a similar doubtful skull of another North-African mammal, *Eliomys mumbyanus* (Pomel), from North-west Spain.

LI.—ASIATIC *TORTRICIDÆ*.

By the Rt. Hon. LORD WALSHINGHAM, M.A., LL.D., F.R.S.

THE *Tortricidæ* of Asia present several points of interest to the students of European *Tineina* through the great resemblance exhibited by many of their number to species with which we are already well acquainted. Although at present the amount of material available is scarcely sufficient to justify any general conclusions, it is apparent that there is in this case, as in parallel instances on both sides of the Equator, a strong tendency to what may be called bands of alliance running east and west within the range of certain degrees of latitude; and that although these bands throw out some few projections to north or south in exceptional instances, such projections are more intimately connected with the question of elevation and temperature than with that of mere geographical distribution. Through the very generous help of my friend Mr. J. H. Leech, I am in possession of valuable series of many Chinese, Japanese, Corean, and Himalayan species collected by himself and hitherto undescribed. These series he has most kindly supplemented by collections made by Mr. and Mrs. Pratt in Central China, by Mr. Pratt in Asiatic Turkey, by Mr. Manley in Japan, and by natives in China, Japan, and Asiatic Turkey. The acquisition of the collection of *Tineina* and *Pterophoridaæ* made by the late Mr. H. J. S. Pryer has afforded me some insight into the extension of European and North-American as well as Asiatic continental and Malaysian forms into the Islands of Japan. The alliance of the *Tortricidæ* of Japan with those of Western Europe is perhaps even more strongly marked than that of the intermediate Asiatic species, but perhaps the larger proportion received

* Ann. & Mag. Nat. Hist. March 1899, p. 227 (footnote).